

Patent Application
Docket No. CRX.106XC1
Serial No. 10/662,492

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner : Patrick Butler
Art Unit : 1732
Applicant : Albert E. Ortega
Serial No. : 10/662,492
Conf. No. : 9209
Filed : September 15, 2003
For : Method of Reducing Static in a Spunbond Process

Commissioner for Patents
P.O. Box 1450
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EXPERT DECLARATION OF ALBERT E. ORTEGA UNDER 37 CFR §1.132

Sir:

I, Albert E. Ortega, hereby declare:

THAT, I have reviewed the above-referenced patent application, including the claims;

THAT, I have reviewed the Office Action mailed August 6, 2009, along with the references cited therein;

THAT, I have extensive experience in the field of spunbond processes;

And being thus duly qualified, do further declare as follows:

1. The Action dated August 6, 2009 discusses at page 3 the temperatures at which components are extruded in Gillespie (U.S. Patent No. 5,783,503) and then asserts that bonding must be done at these extrusion temperatures because “spunbonding is necessarily done by bonding the filaments while they are still molten.” In support of this assertion, the Action refers to the Tortora reference (“Understanding Textiles,” Fifth Edition, page 330, first paragraph), which states that:

“Spunbonded fabrics are manufactured from synthetic filament fibers. Continuous filaments are formed by extrusion through spinnerets, and the filaments are blown onto a moving belt where they form a web. As the still hot and partially molten filaments touch, they bond.”

However, as would be understood by a skilled artisan, this description in Tortora is incomplete. As is known in the art, in a spunbonding process, after the filaments are extruded, they are quenched (cooled), drawn, and laid on a web before being bonded. The filaments may be molten when they are bonded (for example, in a calendar), but they are not necessarily at the same temperature at which they are extruded.

2. The Action dated August 6, 2009 states at page 3 that “Gillespie teaches that a blend of nylon and polyolefins is able to be extruded at about 250 °C,” referring to column 8, lines 45-53 of Gillespie. However, Gillespie actually teaches that nylon can be extruded in one extruder, polyethylene and polypropylene can be extruded in a second extruder (the two extruders are reference numerals 46 and 48 in Figure 4 of Gillespie), and then “the polymers come together in the spin pack at the same capillary temperature of about 250 degrees Centigrade.” Thus, Gillespie does not teach that a blend of nylon and polyolefins is able to be extruded at about 250 °C, but rather that such a blend can come together in a spin pack at this temperature. As is known in the art, coming together in a spin pack is not the same as being extruded.

3. The Action dated August 6, 2009 states at page 2 that “nylon’s or polyester’s additional presence acts as antistatic agents to the polyester or olefins in the blend” due to their standard moisture regain. However, this is not a complete picture of the effects of the presence of these components in the blend with respect to static levels at the exit of an attenuation device. For example, this statement neglects to take into consideration the triboelectric charge, as discussed at column 9, lines 53-55 of Gillespie. The development of the triboelectric charge in the filaments would result in an increase in the static level at the exit of an attenuation device. Additionally, nylon filaments develop a large amount of static when air is used to draw these filaments, as in the process of Gillespie. Thus, including nylon or polyester in the blend of Gillespie would not result in a static level at the exit of an attenuation device of between about -2 kilovolt per inch and about 2 kilovolt per inch.

4. The Warburton reference (U.S. Patent No. 4,081,383) discloses an aqueous dispersion (column 1, lines 45-47), including a polymeric material, as an anti-soiling treatment for carpets and carpet yarns. A skilled artisan would recognize that addition of water into an extruder would cause problems since it could cause depolymerization of polymers typically used in melt blends (for example, nylon 6,6).

5. Since the aqueous dispersion of Warburton is applied directly to carpets and/or carpet yarns, a skilled artisan would not have reasonably expected the addition of this dispersion to a melt blend (before extrusion, quenching, drawing, web formation, and bonding), to impart any anti-soiling properties to a spunbonded nonwoven fabric like it does when applied directly to a carpet or carpet yarn. Nor would a skilled artisan have expected any other advantageous properties of Warburton’s aqueous dispersion (intended for direct application to carpets and/or carpet yarns) to be imparted to a spunbonded nonwoven fabric, when added to a melt blend (before extrusion, quenching, drawing, web formation, and bonding). Any component added to a melt blend will be subjected to high

temperatures, so it would not be expected that the same properties would be imparted as in the case when Warburton's aqueous dispersion is applied directly to a carpet and/or carpet yarn.

6. A skilled artisan would not have been motivated to use any individual components of the aqueous dispersion of Warburton to attempt to impart anti-soiling properties to any fabric; rather the entire dispersion would be used, as taught by Warburton.
7. The George reference (U.S. Patent No. 4,167,464) discloses the preparation of water absorbent films and fibers by photopolymerizing various compounds. All of the films and fibers of George contain water (column 7, line 45 through column 8, line 10; Tables 1 and 2). A skilled artisan would recognize that addition of water into an extruder would cause problems since it could cause depolymerization of polymers typically used in melt blends (for example, nylon 6,6).
8. The highest temperature any of the compounds in George is subjected to is about 50 °C (column 7, lines 64-65). A skilled artisan would not have reasonably expected any advantageous properties of George's interpolymer (only subjected to low temperatures), including water absorbency, to be imparted to a spunbonded nonwoven fabric when added to a melt blend (before extrusion, quenching, drawing, web formation, and bonding). Any component added to a melt blend will be subjected to high temperatures (much higher than 50 °C), so it would not be expected that the same properties would be imparted after melting the interpolymer and mixing with several other components in a melt blend.
9. A skilled artisan would not have been motivated to use any individual components of the George composition to attempt to impart water absorbency properties to any fabric; rather the entire composition would be used, as taught by George.

10. I would understand from the original specification of the subject application (serial number 10/662,492) that the method of producing a spunbonded nonwoven fabric can include forming, in an extruder, a melt blend of at least one polymer and, additionally at least one antistatic agent present in an amount sufficient such that the static level measured at about one half inch below the outlet of the slot attenuation device is between about -2 kilovolt per inch and about 2 kilovolt per inch.

I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

By: 

Albert E. Ortega

Date: 11/6/2009